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INNOVATION IN PRACTICE--THE INSTANT STUDENT RESPONSE SYSTEM WITH EMPHASIS ON MOUNT SAN JACINTO COLLEGE.

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DEVELOPED AND CONSTRUCTED AT MT. SAN JACINTO COLLEGE, CALIFORNIA, A CLASSROOM RESPONSE SYSTEM PERMITS THE INSTRUCTOR TO NOTE INDIVIDUAL STUDENT RESPONSES TO QUESTIONS AND TO PROVIDE IMMEDIATE FEEDBACK. PRESENTATION OF QUESTIONS BY MEANS OF AN OVERHEAD PROJECTOR HAS PROVED TO BE MORE SATISFACTORY THAN PRESENTING THEM ORALLY, KNOWLEDGE OF STUDENT RESPONSES HAS ENABLED THE INSTRUCTOR TO ELICIT VARYING POINTS OF VIEW DURING DISCUSSION OF QUESTIONS. SIMPLER THAN MOST COMMERCIALLY DEVELOPED RESPONSE SYSTEMS, THIS EQUIPMENT DOES NOT PROVIDE A MEANS FOR RECORDING OR RETENTION OF INFORMATION AFTER THE SWITCHES HAVE BEEN RETURNED TO NORMAL POSITION. (WO) RECRUITMENT, AS WAS THE LIMITED CAREER MOBILITY IN SUCH FIELDS. QUESTIONS OF APPROPRIATE USE OF AVAILABLE PERSONNEL AROSE DURING THE STUDY. IT WAS CONCLUDED THAT EDUCATION OF HEALTH TECHNICIANS COULD BEST BE ACCOMPLISHED BY THE COMMUNITY COLLEGE, WHICH WOULD BE IN A POSITION TO COORDINATE CLINICAL FACILITIES, CURRICULUM DEVELOPMENT, AND RECRUITMENT AND PLACEMENT OF TRAINEES. (WO)

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INNOVATION IN PRACTICE:

THE INSTANT STUDENT RESPONSE SYSTEM

WITH EMPHASIS ON MT. SAN JACINTO COLLEGE

UNIVERSITY OF CALIF.
LOS ANGELES

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DR. B. LAMAR JOHNSON

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[UNIVERSITY OF CALIFORNIA, LOS ANGELES
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PEYTON H. PHILLIPS

WINTER 1968

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CHAPTER I

INTRODUCTION

Interest in an electronic student response learning device was stimulated by a presentation given by Mr. Fred Brinkman, Dean of Evening Division, Los Angeles Trade-Technical College. Mr. Brinkman discussed a proposal to install a commercial EDEX system at Los Angeles Trade-Technical College during a Junior College Seminar held January 6, 1968 at UCLA. This writer envisioned a total new concept in teacher involvement with students through the use of this type of equipment. The possibilities were exciting and acted as a catalyst to seek further information on any uses, successes, or failures of this student response system.

STATEMENT OF PROBLEM

To this writer, an electronic student response system is innovative to the extent that it is not known to be widely used in educational institutions. Using Dr. B. Lamar Johnson's definition* of innovation as meaning any procedure, method, or change, which has been initiated by and is new to a particular

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*Dr. B. Lamar Johnson discussed definitions in the Seminar, Junior College Curriculum, on January 6, 1968 at UCLA.

organization or individual, a study of student response systems would fall into the catagory of "innovation" in the junior college.

The problem can be stated in a series of questions. What is a student response system? What is its genesis? How has it been implemented in the classroom? What evidence do we have of its effectiveness? What can be envisioned for future utilization? And, what implications are involved in its utilization?

PROCEDURE

A joint interview was held Monday, January 15, with Mr. Richard Vreeland, Audio-Visual Consultant, and Mr. Fred Brinkman, Dean of Evening Division, Los Angeles Trade-Technical College. They have presented a proposal to install an EDEX student response system in the college. Because they have not been able to evaluate the EDEX system in action, the information obtained was descriptive and in the realm of subjective optimism for its utilization.

It was found that the commercial response system EDEX was manufactured by the Raytheon Corporation. Unable to obtain information locally, a call was placed to the Raytheon Corporation in Mountain View, California. The writer was directed to Mr. Bernie Keach of Inglewood Electronics, who supplied the printed information desired.

An attempt to visit Pasadena City College was unsuccessful, as the school was either in the process of finals or the start of a new semester. However, arrangements were made for

interviews with Mr. Paul Bass, Chairman of the Math Department, Chaffey High School, Mr. Steve Nelson, instructor of Sociology and Psychology at Mt. San Jacinto College, and Dr. Milo Johnson, President of Mt. San Jacinto College. These interviews were held February 2, 1968.

A review of the literature was also used as a means of researching this topic. Commercial advertisements as well as the more common publications were reviewed. An attempt was made to recognize the bias of commercial advertisements. Commercial descriptive information and theoretical constructs were evaluated as objectively as possible. This is a difficult task when one becomes enthused with the teacher-learner possibilities of this equipment.

DELIMINATION OF STUDY

Following a preliminary investigation, it was decided to focus on the Mt. San Jacinto College's S.I.R.S., Student Instant Response System. It was felt that the innovative climate at Mt. San Jacinto College concomitant with integrated instructional procedures were indicative of a practice which would provide a unique contribution to the reader.

INSTANT STUDENT RESPONSE SYSTEM: A DESCRIPTION

Any device or procedure that provides an immediate value response from all students in the classroom in answer to a question or problem posed by the instructor fall within the catagory of an instant student response system. This would eliminate any devices in which the response does not indicate

a value between two or more possible choices, e.g. the raising of a student's hand to a question provides an immediate response, but there is no indication as to whether there is agreement or disagreement (value) to the question posed. An instantaneous student response system necessitates the interaction of three parts:

1. A response device.
2. Questions posed which can be answered by a yes-no or multiple choice reply.
3. A climate in which all students respond to all questions posed.

CHAPTER II

GENESIS

Although there is no substantiating evidence, it is indicated that the present systems grew out of an idea developed by Dr. Milo Johnson.* The growth will be traced through the development of four devices: (1) Answer by Card, (2) Answer Light, (3) S.I.R.S., and (4) EDEX. Dr. Johnson indicated that similar devices have been patented in the past but have been of limited value. It is the understanding of this writer that a device has been constructed on the Pasadena City College Campus similar to EDEX and S.I.R.S. It was reported that one advantage of this system is that if a student response is incorrect, he can find the correct response. Unfortunately, the writer was unable to visit this installation.

ANSWER BY CARD

Answer by Card was first conceptualized by Dr. Milo Johnson in the early 1950's. Prior to an instructional presentation, Dr. Johnson passed out a set of four cards

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*Dr. Milo Johnson, an interview at Mt. San Jacinto College, February 2, 1968. The information on "Answer by Card", "Answer Light", and S.I.R.S. was obtained from Dr. Johnson during this interview.

numbered one through four to each of his students. Each card was approximately 3/4 of an inch to one inch wide and six to seven inches long. The numbers were placed at the top of each card. Below the number, the card was creased forming a small tab. Each tab was of a different color. These cards were then placed in a book so that only the tabs and numbers were showing. The book was placed in an upright position in front of the student. When a question was asked and a choice of responses was presented, each student was required to pull the card corresponding to his perception of the correct answer. The student pulled the tab end of the card four or five inches from between the pages, thereby clearly showing his selected response. The teacher was then able to scan the room and determine the response of each student.

ANSWER BY CARD: A SECOND STEP

As an attempt for improvement, an answer box was constructed in which colored metal rectangles similar in shape, size and construction were utilized. The tabs were so constructed that when the student raised the tab, a hooking device held the tab in position until the student unhooked the tab and lowered it into the box. This was the first attempt to develop a commercial product for market consumption. This device was a mechanical adaptation of the textbook and card system.

ANSWER LIGHT

A battery operated facsimile to Answer by Card was the development of Answer Light about 1958. Student response is indicated by one of a series of colored lights. Using ordinary

flashlight batteries as a power source, a colored light remains burning as long as the student presses a response button. Four different colored lights are extended by means of a pencil sized rod approximately two feet above the four response buttons and battery unit. The battery unit is weighted so that the center of gravity is very low making it difficult to overturn the device. This device resembles a miniature traffic light. The brightness of the lights is more easily discernable than colored tabs or the number system facilitating the scanning procedure by the teacher.

The student response buttons can be numbered 1, 2, 3, 4, or A, B, C, D, and keyed to the four colored lights. In this manner, the teacher knows the correct response by number, letter, or color.

The "answer light" system provides portability coupled with a more efficient response indication than was available in the past. Dr. Milo Johnson still uses these devices in workshops and institution meetings.

STUDENT INSTANT RESPONSE SYSTEM, S.I.R.S.

A further refinement developed by Dr. Johnson was the Student-Instant Response System which he named S.I.R.S. When Mt. San Jacinto College was constructed, one room was wired for this system. In principle and type of hardware, it is basically the same as the commercially produced EDEX.

The S.I.R.S. electronic equipment consists of four toggle switches on the underside of each student's desk and a teacher console board. The instructor's console is a rather

unsophisticated appearing piece of equipment. It has provision for 63 student stations, each station being represented by four different colored lights. All 63 student stations are represented by small rectangles on a 9 ½" x 11" area. A seating chart is provided by a transparency with each student's name appropriately spaced and corresponding to the equivalent station on the console. When the student throws a toggle switch at his desk, a corresponding light is illuminated on the teacher's console. By scanning the console, the teacher determines what answers are given, by whom, whether any students fail to respond, and which ones. Student responders are cleared by reversing the switch to the off position. Wiring between the student's desks and the instructor's console is carried through a floor channel running lengthwise down the center of the room. The wiring branches off to each station along the row of permanently installed desks.

In answer to the question of approximate installation and materials cost, Dr. Johnson replied that the total cost was considerably less than a commercial system. As the unit was installed as part of the electrical contract during the construction of Mt. San Jacinto College, no figure was available.

EDEX

EDEX is a commercial communications system produced by the EDEX Corporation, a subsidiary of Raytheon Company. It is basically the same system as S.I.R.S. Student stations may be installed with push-button or dial control response

switches. There are five push-buttons on the responder, four for the student response, and the fifth to clear the responder. The instructor's console, in addition to being more attractive than the S.I.R.S. program, offered one added advantage. Meters on the console register the total group response as a percentage of students answering in each catagory. A recorder on this unit tabulates a cumulative score for each student available on demand. Cumulative scores can be read out as the total number of correct responses or a total score calculated on a given value for each possible response. This read out can be used by the teacher as a record for spotting individual weaknesses, for diagnostic purposes, and for evaluation of student achievement.

Mr. Richard Vreeland* of Los Angeles Trade-Technical College has written a proposal to install a 40 seat EDEX Communications System as described above, including a dual tape programming unit. This combined complex will cost $7,400. The cost was not broken down for the two separate components.

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*Mr. Richard Vreeland, an interview at Los Angeles Trade-Technical College, January 14, 1968.

CHAPTER III

COMMUNICATIONS AND REINFORCEMENT THEORY

The theoretical concepts which underlie a rationale for utilization of a student response system lie within the area of (1) communications theory and (2) reinforcement theory.

COMMUNICATIONS THEORY

Most theories and models of effective communications include two dimensions, a communicator and a communicatee, plus a circular process through which there is an interplay between communicator and communicatee. This circular process is usually defined as a communication loop in which there is a feedback to the communicator. McCloskey[1] states:

> "research shows that this 'feedback' is an extremely important element of communication . . . the extreme importance of stimulating the largest possible amount of two-way communication is emphasized by Thomas Fransler, Samuel I. Hayakawa, Elton Mayo, Stuart Chase, and many others."

Student response systems are based on the concept of a communications loop and improving the loop by facilitating a rapid feedback to the instructor. In a dittoed paper

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[1]Gordon McCloskey, Education and Public Understanding. New York: Harper and Row, 1959, p. 63-64.

entitled "Answer by Card, A Method of Instruction"[2] Dr. Johnson states, "These devices are conceived to be primarily for the purpose of . . . informing the teacher when his presentation is actually communicating with the students."

In a paper entitled "S.I.R.S., Student-Instant Response System",[3] the statement is made, "The Student-Instant Response System provides constantly available feedback from all students to the teacher." The inference is that the closer the feedback, the more efficient the system. If the "feedback theory" is accepted, the immediacy dimension falls within acceptable learning theory.

The Raytheon Corporation[4] advertises that the communications system provides a closed communications loop which consists of an instructor who makes a presentation, a response by all students, an evaluation by the teacher, and appropriate adjustments, thus completing the instructional loop.

REINFORCEMENT THEORY

Most of the evidence supporting reinforcement theory has been obtained experimentally using animals as subjects. Because of this, there is some controversy as to the application of

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[2]Dr. Milo Johnson, "Answer by Card, A Method of Instruction", duplicated paper, Mt. San Jacinto College, 1960, p. 1.

[3]Dr. Milo Johnson, "S.I.R.S., Student-Instant Response System", duplicated paper, Mt. San Jacinto College, p. 1.

[4]"Intermedia, Raytheon Integrated Learning Systems", printed advertisement obtained from Inglewood Electronics, Inglewood, California.

reinforcement "laws" to human learning. Regardless of one's position, behavioristic studies provide implications that cannot be ignored. Studies in the areas of psychosomatic disorders have unquestionably linked the functioning of the autonomic nervous system to behavioristic activities in the human being. Environmental conditions which stimulate autonomic responses can be recognized in the cognitive domain. Behavioral activity is the result.

The extension of the reinforcement concept to human behavior is largely a result of the writing of B. F. Skinner, father of programmed learning. Skinner's concept of reinforcement is supportive of the use of a student response system.

> "Skinner . . . clearly identifies reinforcement in the case of human behavior with events which provide the human organism with information about the consequences of its behavior". . . . Skinner indicates . . . "that approval is a reinforcing event and so too are statements such as 'that's right' or 'good'."[5]

Travers states that guidance, feedback, and knowledge of results can be classified under a broad definition of reinforcement. Several studies are of import to this discussion. Anneth[6] found that learning is least effective when conditions do not permit the person to make an error. He found that just knowing the correct response was less efficient. Thus, the position taken by the Skinner school of thought that only correct

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[5]Robert M. W. Travers, Ian E. Reid, and R. Keith Van Wagemen, Reinforcement in Classroom Learning, Washington, D. C.: United States Office of Education, 1963, p. 9.1-9.2.

[6]Ibid, p. 9.21-9.23.

responses should be permitted (in programmed learning) probably applies to a limited range of tasks.

Studies by Buss, Fergusen, Buchwald, Meyers, and others[7] studied the relative effectiveness of the teacher using the terms "right" = R, "wrong" = W, or saying "nothing" = N as reinforcers. The results were consistently uniform. R-W and N-W reinforcements were found to be close to one another in their effectiveness and superior to the combination of R-N. Age seemed to be a factor in N as a reinforcer. Implications are immediate as we realize that the most commonly used reinforcement pattern in schools is the R-N combination, the least effective method of the three.

A study by Annet and one by Alonzo[8] in 1926 suggests the possibility that a student could become dependent upon the student response system to a degree that without it learning would decrease to a lower level than before its use. Annet found that when cues (reinforcement) during performance were withdrawn, performance of subjects fell back to a level expected in their absence. Alonzo found that subjects became so dependent upon cues during performance they were unable to perform tasks without them. The implication is that through the use of a response system, continually spoon feeding material to the student and reinforcing his correct (or incorrect) response, the student could become so dependent upon a

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[7]ibid, p. 9.23-9.26.

[8]ibid, p. 9.19-9.20.

reinforcing reward that learning at an independent level could be handicapped.

CHAPTER IV

MT. SAN JACINTO COLLEGE,

A CLIMATE FOR CHANGE

Mt. San Jacinto College was first operationalized in September 1963 without permanent structures. Day students were allowed to attend the out-of-district junior college of their choice with the local junior college district paying the tuition. Evening students attended classes in rented buildings. In 1966, the college moved into its present permanent buildings[9] A five unit complex housing approximately 700 students consists of (1) an administration, library unit, (2) classroom unit, (3) student union, music, drama unit, and (4) physical education, vocational education unit.

From its inception, the Board of Trustees and the administration of Mt. San Jacinto College have been dedicated to innovative curriculum development utilizing a multi-media approach to learning. This approach is sometimes referred to as a "systems" approach.

The impact of the above statement can be better realized as one understands the operation involved in developing and

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[9]C. Loran Lee, "The Changing Role of the Library on the Junior College Campus - A Case Study at Mt. San Jacinto College, duplicated seminar paper, UCLA School of Education, Fall 1966, p. 1.

maintaining a systems approach. A systems approach as applied to education involved:

> "(1) defining instructional goals stated in measurable terms; (2) entertaining and testing all pedagogical methods and media which could bring about any or all aspects of the stated goal; (3) selecting the most efficient goal attaining system; and (4) updating and evaluating continuously along with a repetition of steps one through three above."[10]

It is interesting to note that at Mt. San Jacinto College only faculty applicants are hired who are willing to remain on the job 40 hours a week and take a summer course in preparing objectives and dedicated to a sustained commitment to the multi-media approach.[11]

Under the facilitating leadership of President Milo Johnson, there is evidence of sustained commitment to the systems approach. Faculty members are involved in writing behavioral objectives* producing audio-tutorial tapes, film-strips, and experimenting for improved teaching effectiveness, and evaluating procedures. During the visitation, there was evidence of set backs, but not failure. If some effort proved unsuccessful, it perhaps meant delay toward a more favorable solution. Thus, the total climate is conducive to

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[10]Cyrus Kirshner, "What are the Anticipated Problems of Evolving a "Systems Approach" to Education From Within the Established Junior College?" duplicated seminar paper, UCLA School of Education, December 1966, p. 2.

[11]Richard A. Jones, "Implications of Selected Innovations in Curricula and Instruction for the Desert Division of Bakersfield College, duplicated seminar paper, UCLA School of Education, Fall 1966, p. 12.

*See appendix, page 30 for sample of behaviorally stated objectives.

change and success. One gets the feeling there will be more success, as there also is a climate of guarded but assured confidence in success.

CHAPTER V

IMPLEMENTATION AND EVALUATION OF THE STUDENT INSTANT RESPONSE SYSTEM

IMPLEMENTATION

Mr. Steve Nelson, instructor of Sociology and Psychology, has been working on effective utilization of S.I.R.S. for one and one-half years. He feels that only now he is becoming proficient in its use. First efforts to ask questions on a yes-no or multiple choice basis in a classroom setting were stilted and unsatisfactory. Questions and multiple choice answers posed orally by the instructor caused further problems in that students forgot the possible choices or their order. Continuity of the course content was broken. Time was lost with no visable evidence of improving the learning situation. Mr. Nelson found that projecting the questions* and responses proved more successful. There was no confusion as to the meaning of questions and students could analyze alternatives before responding.

Usually one to three questions are projected for each hour of instruction. Questions are of three types:

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*See appendix, page 32 for sample questions prepared on overlay material.

"a. Opinion questions with no single answer which were designed to motivate the students into meaningful discussion.

b. Questions in which the student was asked to select the single best answer when other alternatives might be acceptable.

c. Questions on the assigned reading material or previous lectures which were designed to evaluate the student's understanding of the subject."[12]

Mr. Nelson found that focusing on record keeping of individual responses proved too time consuming and detracted from his presentation. S.I.R.S. response records must be kept by hand tally. Time spent in tallying responses delayed class.

Upon analysis, Mr. Nelson found that a major objective of the course was to encourage class discussion. As a result, his questions are now constructed in a manner where there is no right or wrong answer. All students must respond to all questions, and as such, are forced to form an opinion. By scanning the teacher console, Mr. Nelson calls upon students by name to discuss their opinion. Those holding opposite views are also called upon to support their position. Mr. Nelson feels that this has increased interest and learning in the subject and certainly has stimulated discussion.

All students become involved. They cannot sit idly by hoping that learning sinks in. Whenever the student throws a switch, he has been thinking as he may have to support his

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[12]Steve C. Nelson, "Evaluating the Student Instant Response System (S.I.R.S.) as a Teaching Method", duplicated report, Mt. San Jacinto College, 1968, p. 1.

response. This stimulates the student to clarify concepts and to attempt recall of facts for support of his position. Since the classroom climate is one of acceptance, and because there are other students who hold the same view, the student has the support of others.

EVALUATION OF S.I.R.S.[13]

Mr. Nelson attempted to evaluate the influence of the S.I.R.S. program on (a) student interest in the subject matter area, (b) student involvement in the class, (c) student participation in the class, and (d) student ability to understand the subject matter.

A questionnaire was administered to the 133 students in Mr. Nelson's beginning psychology and sociology classes. It was found that student interest was increased by 73% of the students while 77% felt an increased involvement. An increase in participation was felt by 68% of the students, and 78% indicated their understanding of the subject matter had likewise increased.

All but one of the remaining students indicated that the S.I.R.S. program affected them neither positively nor negatively. That one student felt that the use of S.I.R.S. hampered her participation. It was indicated that this student tended to panic when the switch was thrown. Mr. Nelson stated she was a very shy student and would not be prone to participate in discussion under any circumstances.

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[13] ibid

In addition, 122 of the 133 students, or 94%, indicated that they would recommend the course to a friend, or if they repeated it, they would sign up for the S.I.R.S. section again.

Mr. Nelson's personal evaluation was one of enthusiastic endorsement. He feels that it would be difficult to return to a classroom without a student response system. Since a definite majority of students indicated that interest and involvement were increased and this being consistent with learning theory, he feels this alone should warrant the expansion of the program.

Electrical difficulties have been minor, such as burned out bulbs and poor connections. Switches wear out and need replacement, and students do break switches. None of these difficulties have proven to be serious and maintenance has not been a particular problem. There were times when students would switch connections among desks but nothing malicious.

CHAFFEY HIGH SCHOOL EVALUATION OF EDEX

Mr. Paul Bass* chairman of the Chaffey High School Math Department, indicated that maintenance was their major problem in the use of the EDEX system. This E.S.E.A. funded system is used three periods a day by three double classes in basic arithmetic and one period each by an algebra and a geometry class. Damage to switches is a considerable problem. In addition, Chaffey has not been able to maintain the system in

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*Mr. Paul Bass, interview held February 6, 1968 at Chaffey High School, Ontario, California.

consistent working order. Mr. Bass recommends that maintenance be contracted to the EDEX Corporation rather than district maintained. He also feels switches need to be improved for hard use.

AN EXPERIMENTAL STUDY[14]

Dr. John McNeil, UCLA professor, attempted to determine the effectiveness of student-teachers using answer light as a means of visual feedback. Two control and one experimental groups were studied. One control group was taught using systematic questions but no special opportunities for recognizing pupil response. In the second control group there was chance presentation of questions and responses. The experimental group was taught using systematic questions and answer lights. Pre- and post-questionnaires were administered five weeks apart to the students as a means of evaluating the behavior of the teacher. Correlations of evaluation means for each group between teacher practices at the beginning and the end of the study indicated there was no significant change with respect to teaching behavior in either control or experimental groups.

When answer light was used, pupils indicated that they felt under obligation to listen more intently, that teachers knew more about the pupil's learning, and they learned more because of this aid.

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[14]John McNeil, "An Experimental Effort to Improve Instruction Through Visual Feedback," The Journal of Educational Research, 55, March 1962, 283-285.

The student response systems can be likened to a cybernetic system, a continually sensing and adapting mechanism. The teacher projects a stimulus to the student in the form of a question, the student responds through the use of a responder. This response is sensed and evaluated by the teacher who adapts his behavior in accordance with the need of the students. Theoretically, the use of student response system meets the criterion of effective communications. Learning theory is also supportive. Other considerations will be discussed in the following chapter.

CHAPTER VI

SUMMARY AND IMPLICATIONS

IMPLICATIONS FOR THE USE OF A STUDENT RESPONSE SYSTEM

The hypothesis underlying the use of a student response system is: There will be increased learning through improved instruction. All the emphasis on evaluation has been in the area of "improved instruction", and "increased learning" has been assumed to be a natural outcome but one that has not been measured. The student response method does not guarantee successful learning, however, much theoretical and logical evidence is presented that it does.

Guidelines for effective utilization of a student response system and program outcomes are necessary objectives as measures for evaluation, but they do not measure learning. Continued study must be conducted before we can conclusively report that student learning has increased using this method of teaching. Mr. Steve Nelson hopes to measure the extent of learning using the S.I.R.S. system. Two groups will be studied, each covering the same material and using the same tests. Each of the groups will be exposed to the S.I.R.S. method of instruction during alternate quarters. Mean scores on examinations will be compared at the end of each quarter. A comparison of mean scores would give an indication as to

the effectiveness of this teaching method.

End Quarter One

End Quarter Two

A Group, taught using S.I.R.S. is the experimental group in quarter one. B group is control group.

B group becomes the the experimental group in quarter two, while A group becomes the control group

Hypotheals might be: (1) at the end of Quarter 1 mean scores of Group A using S.I.R.S. will be higher than mean scores of Group B using the lecture and discussion method of instruction. (2) at the end of Quarter 2 mean scores of Group B using S.I.R.S. will be higher than mean scores of Group A using the lecture and discussion method of instruction.

An involvement of the faculty in the development and implementation of programs utilizing response systems is needed. Differences in course content would influence the presentation and question format. Some courses would not lend themselves as well as others. It would be necessary that explicit behavioral objectives be stated and that members in each department at the least be familiar with objectives and methods of teaching used by their fellow teachers.

Individual use of the system will vary from teacher to teacher. For proper and efficient utilization, it would be wise to provide workshops in addition to individual instruction on its use. Teachers will need opportunity to practice. Follow

up workshops would certainly be beneficial to teachers so they could discuss their problems in common and share their success with the group.

This writer feels that an administrative climate, open and facilitative, is a necessary stimulant to effective change, whether that change is in the utilization of a response system or the development of a new program in a subject area. Teachers will experiment and profit when "failure" is not in the vocabulary.

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APPENDIX

INTERVIEWS

Mr. Paul Bass, Chaffey High School

Mr. Fred Brinkman, Los Angeles Trade-Technical College

Dr. Milo Johnson, Mt. San Jacinto College

Mr. Steve Nelson, Mt. San Jacinto College

Mr. Eric Rice, Chaffey College

Mr. Robert Vreeland, Los Angeles Trade-Technical College

SAMPLE OF BEHAVIORALLY STATED OBJECTIVES

UNIT OBJECTIVES

Unit I

1. Be prepared to explain orally in ten minutes the three theoretical orientations to social problems by using sociological concepts such as continuum, cultural relativity, ethnocentrism, learned behavior, social dynamics, and cultural lag. Give examples which demonstrate your points.
2. Be prepared to explain orally, in five minutes, the concepts of the scientific attitude, include attitudes and approaches which do not meet the criteria.

Implementation of unit objectives.

In a testing atmosphere complete each of the tasks below in 5 minutes or less with 80% accuracy.

1. Write out the four criteria of a social problem.
2. List 3 contributions the concept of continuum can make to the study of S.P.
3. List 3 characteristics of Cultural Relativity and 3 characteristics of Ethnocentrism.
4. List 3 characteristics of Social Dynamics and 3 characteristics of Cultural Lag.
5. List 4 reasons why learned behavior is an important concept for understanding social problems.
6. Outline briefly (35 words or less) the theoretical orientation of social disorganization.
7. Outline briefly (35 words or less) the theoretical orientation of value conflict.
8. Outline briefly (35 words or less) the theoretical orientation of personal deviation.
9. List 2 contributions each of the three theoretical orientations can make to understand social problems.
10. List 6 reasons why the scientific approach is important to the study of social problems.
11. From a list of 15 statements, recognize the ones which do not meet the criteria of the scientific method.

Unit II Urbanization

Dr. Harry Gold, Professor of Sociology, has stated:
"Rapid urban growth is perhaps one of the most important social trends of modern American society. So pronounced has been this trend in recent decades, that almost all contemporary social problems....have been associated with the process of urbanization in one way or another."

In 20 minutes or less orally, analyze this statement and in addition propose a solution for the correction of the six problems created by urbanization that are mentioned in the media.

Implementation of unit objectives.

In a testing atmosphere complete each of the tasks below in 5 minutes or less with 100% accuracy.

1. Define urbanization and list two reasons why this definition is or is not adequate.
2. Explain in 50 words or less the extent of urbanization in the United States.
3. List and explain 8 characteristics of urban society.
4. List the influence urbanization has on crime.
5. List the influences urbanization has on families.
6. List the influences urbanization has on population.
7. List the influences urbanization has on old age.
8. List the influences urbanization has on education.
9. List the influences urbanization has on poverty.
10. List the influences urbanization has on race relations.
11. Propose in detail a solution to a problem created by urbanization.
12. Briefly evaluate the solutions proposed by your fellow small group members.

TO ESTABLISH RELIABILITY ONE COULD:

1. REPEAT TEST
2. GIVE TWO FORMS
3. USE SPLIT HALF TECHNIQUE
4. COMPARE RESULTS TO A CRITERION

THE BEST KIND OF ITEM FOR AN IQ TEST WOULD BE:

A. A TOTALLY NOVEL ITEM
B. ASSUREDLY FAMILIAR ITEM
C. A CULTURE FAIR ITEM

THE HIGH IQ PERSON:

A. TENDS TO "BURN OUT" AS HE GROWS OLDER
B. LACKS SOCIAL ADJUSTMENT
C. IS USUALLY GIFTED IN ONLY ONE FIELD
D. NONE OF THE ABOVE

CROWD BEHAVIOR:

a. IS SIMILAR TO ORGANIZATIONAL BEHAVIOR

b. HAS NO RULES

c. HAS NO STRUCTURE

d. HAS NO LEADERS

CHARACTERISTICS OF CROWD BEHAVIOR:

a. ANONYMITY

b. IMPERSONALITY

c. SUGGESTIBILITY

d. SOCIAL CONTAGION

WHICH TYPE OF CROWD PARTICIPANTS PLAYS THE MOST IMPORTANT ROLE:

1. THOSE WHO FEEL THEY ARE TAKING RESPONSIBLE ACTION

2. THOSE COMMITTED TO THE GROUP

3. SPECTATORS

4. THOSE WHO GAIN DIRECT SATISFACTION FROM PARTICIPATION REGARDLESS OF CIRCUMSTANCES

5. PERSONS WHO'S INHIBITIONS ARE DOWN (1+4)

6. MANIPULATORS (2+4)

THE FOLLOWING STATEMENTS LACK

1. Accuracy
2. Precision
3. Objectivity

A. Blondes have more fun.

B. Studies prove GLEEM out cleans them all.

C. 51.6% of all marriages in the United States do not meet a minimum standard of happiness.

WHICH OF THE FOLLOWING DO YOU FEEL IS THE MOST IMPORTANT IN SCIENTIFIC RESEARCH?

1. Formulate the problem
2. Plan research design
3. Collect data
4. Analyze the data

(4+1) 5. Draw conclusions

(4+2) 6. Report findings

			Sociology 1A	Section 1				
	EDWARD Lindsey	PHIL DeBord	DIANE Munson		TED Elson	MANUEL Moreno	OLGA Rode	
JUNE Gordon		LINDA Slapnek	QUIMBY Clark	SUE Cole	BOB Roberge	ED Runge	PEGGY Jones	HELEN Lyons
JACK Ihrig	TONY Senior	DON Wheelock	CARL Rivera	TERRY Preston	MARY Cambrell	ELAINE Eichholz	JOHN Camp	LARRY Cassidy
MARK Crow	JIM Sirextsem	JODI Wales	IRENE Arias	JOANNE Vaughn	DONNIE Bautcher	DONNA Trumpy	MARY Wagoner	KAREN Wallace
DENNIS Woodworth	SAM Rasmus	DOROTHY Lubin	LINDA Armstrong		LILY Ortega	HELENE Sand	BENITA Nuse	INGRID Thuesen